

**Chronology of Snowmaking**  
Notes for 2001 Exhibit, New England Ski Museum  
by Jeff Leich

The following notes on snowmaking are intended to aid in the development of a Ski Museum exhibit. In many cases it is unclear from the sources referenced below exactly when a particular machine or practice was first invented or instituted. It is also probable that sources with data on certain early inventions were not located. It is therefore not possible to determine which machine or practice was "the first" of its kind; rather, this chronology is intended to indicate the general sequence of the development of snowmaking for skiing.

**1934** "A novel experiment was attempted by the Toronto Ski Club 'Board of Strategy' when faced with the opening of their new jump with a major competition and no snow in sight. An excellent substitute for snow was provided in the form of shaved ice....made arrangements with the University of Toronto skating rink to have their ice planer work overtime...Several trucks were employed to haul the pulverized ice to the jump, a distance of about four miles...Seventy-five tons were cut and delivered within a few hours. This was sufficient to cover the entire hill from tower to outrun, with about six or eight inches on the landing slope....it was from ten to twenty percent faster than dry snow, as jumps made on that day were comparatively longer...the total cost of 'manufacturing' the snow was about \$80, or approximately \$1 per ton. This was for trucking alone as the cutting was done for free" (Hall, p. 51).

**1934** "...the real credit for the idea of improving on weather conditions belongs to the ski jumpers who began holding meets on crushed ice at Bear Mountain, New York, as early as 1934. Today, jumping on crushed ice has become an institution at Bear Mountain and seldom is a meet cancelled because of the weather" (National Skiing, January 15, 1955, p. 14).

**1937 (December)** Boston Garden ski show: "The snow is really ice ground into corn snow likeness from regular commercial blocks used by the Metropolitan Ice Company. It is ground and blown out through a special machine developed by the Link Belt Company for icing refrigerator freight cars and it takes about 13 hours and a little over 100 tons of ice for the first "coating". Thereafter 10 to 15 tons a day is needed to keep the hill in condition" (Moore, p. 37).

**1940s (mid to late decade)** "There is definite agreement within the skiing industry that manufactured snow was produced in Canada during the mid to late forties. During that period, the Canadians (and the British and Americans) were experimenting with de-icing equipment on airplanes . Obviously, it was necessary to produce "field" conditions at the testing facilities to properly ascertain the effectiveness of the numerous de-icing methods being studies. As a result, various nozzles were fabricated in an effort to generate freezing rain, fog, and sleet. The output from the nozzles was described in the literature as "snow"" (Eriksen, p. 70).

**1949 (December)** "Under a shroud of secrecy, during December 1949, the (Tey) brought one of their original snowmaking prototypes to Mohawk Mountain and actually produced the first documented machine-made snow for skiing" (Eriksen, p. 70).

Beginning **Wednesday January 18, 1950** and extending to the weekend, Walt Schoenknecht at Mohawk Mountain makes skiable surface by chipping hundreds of blocks of ice (Schoenknecht, p. 203) (Eriksen, p. 70) (Eastern Skier, Feb 1, 1950).

**1950 (March 14)** "By March 14, 1950, Tey was producing up to 18 inches of snow each night at their plant site" (Eriksen, p. 70).

**1950 (December 14)** Tey filed a patent application on snowmaking (Eriksen, p. 71).

**1950 (December)** "Larchmont wrote to Tey concerning the patent application and suggested that an irrigation nozzle now being used to protect crops from frost by using live steam and water, might be modified to make snow. On December 13th, Larchmont responded to Tey's request for a sample nozzle" (Erickson, p. 71).

**1950 (December 22)** "...until the Tropeanos (Larchmont Farms Company, Lexington, MA) "discovered snow" on December 22, 1950, their sole purpose was to drive the frost from Florida orange groves; they had not the slightest intention of bringing snow to New England ski slopes. ...the morning of December 22 dawned bitter cold in Lexington and Phil Tropeano chose that morning to test a new type of nozzle for the steam system...the frozen brown earth surrounding the nozzle promptly acquired a covering of dazzling whiteness. Close examination by Phil Tropeano convinced him that for all intents and purposes, the white covering was snow" (Blaisdell, p. 69).

**1950-1951** "Two temporary systems were installed for the winter of '50-'51; one at Mohawk and the other at Split Rock Lodge (now Big Boulder) in the Poconos" (Erickson, p. 71).

"The two areas selected for the first installations were Mohawk Mountain Ski Area, Cornwall, Connecticut, and Split Rock Lodge, Whitehaven, Pennsylvania" (Walsh, p.52).

"Walter R. Schoenknecht, manager of the state forest area, announces the end of a long testing period for the snowmaker developed by the Tey Mfg. Co. of Milford, CT....Successful experiments carried out over the long New Year weekend added almost three inches of man-made snow to an eight-inch packed base...Schoenknecht now plans to use the snow-maker every night over weekends to assure improved skiing for the next day...Similar tests, on a smaller scale, are being carried out at the Split Rock ski area in White Haven, Pa" (Eastern Skier, January 15, 1951, p. 1).

**1952** "The first major commercial snow-making installation was undertaken at Grossinger's in New York State in 1952 and directed by engineers of the Tey Mfg. Co. (now The Sky-Worker Corp.) of Milford, Conn., which owns Wayne M. Pierce, Jr's patent on the process....Artificial snow, says the Grossinger management, "is no longer a luxury, but an absolute necessity for our winter operation"" (Shyke, p. 33).

"During subsequent winters the development program continued in the problems of nozzle and system design. Additional installations were made, one of the most successful being the installation at Grossinger's Hotel near Liberty, New York" (Walsh, p. 53).

**1954 (April 27)** Patent number 2,676,471 issued to Tey Manufacturing Company of Milford, CT (SAM, p. 32).

**1956 (November 15)** Boyne Mountain Michigan announced a snowmaking installation: "expected to cover an area 2000 feet long, with a vertical drop of 490 feet...Austrian ski star Franz Gabl will be on hand to conduct the Boyne Mountain ski school with a staff of five Austrian ski instructors" (National Skiing, November 15, 1956).

**1956 (November 30)** longest snowmaking slope installed to that time was at Bousquet Ski Area, Pittsfield, MA; 1500 foot Russell Slope (Hitchcock p. 10).

**1956-57** "One of the outstanding installations to date was started last winter at Laurel Mountain Slopes, Ligonier, Pennsylvania under the direction of William D. Boardman. the portion of the slope covered at Laurel Mountain is approximately 1450 feet in length and 200 to 300 feet in width, with a total rise of 246 feet. Eighteen nozzles are employed" (Walsh, p. 54).

**1958 (December 13)** Killington opens "with two Pomas operating on Snowdon, a CCC hut for a base lodge, a renovated chicken coop for ticket booth, and an 8-seat outhouse (Lorentz, p. 258).

It was Pres Smith's vision from day one to be the first area to open and the last to close (Bousquet).

**1958-59** 18 out of 104 ski areas in New England and New York list snowmaking systems in the Eastern Ski Area Directory, Eastern Ski Annual, 1958; first year the directory listed snowmaking data. Black and Mittersill in NH, Mt Snow in VT. (ESA 1958, pp. 102-112).

**1959** Larchmont buys the snowmaking patent from Emhart, who had bought it from Tey (Erickson, p. 71).

**1962 (Christmas Day)** "A real turning point. It rained Christmas Day, and there was a forecast of snow. Pres and I were in the office, and he said something like "get everybody out of the woodwork--we're going to pick rocks today" .So everyone was out picking rocks in the rain. Pres vowed never again to be caught like that. We went to Michigan and toured snowmaking systems out there, where they were further along in developing snowmaking system. Killington didn't necessarily buy into what the Tropeanos were doing. We subsequently bought a Larchmont system that was pretty much a total failure; a gravity system that froze pipes galore, which we would have to replace with fresh pipe" (Bousquet).

**1963 (Fall)** Killington installs snowmaking at its Snowshed area. "A significant promotional effort went into effect for the 1963-64 season with midweek vacationers being guaranteed snow for their ski weeks due to the new snowmaking equipment" (Lorentz, p. 59).

System was 3700 linear feet, with a 1800 foot pipe to water supply to the stream coming off Killington; water was pumped from there to the top of Snowshed, then flowed by gravity into the system (Bousquet).

**1963-64** Killington scrapped its Larchmont system, created pond at base of Snowshed (Bousquet).

**1964** "Ratnik Industries installed the first freeze-proof system at Bristol Mt, NY, using self-draining "yard" hydrants and buried piping. Other patents were issued and new snowmaking equipment suppliers joined the parade with their own nozzles or snow guns (Erickson, p. 71).

**1965** Snowmaking at Killington improved (Lorentz, p. 259).

**1966 (May)** "In its first legal action against patent infringement, Larchmont in May initiated proceedings against Ratnik Industries of Rochester, NY, which sells and installs snowmaking systems, and Bristol Mountain at nearby Canandaigua, NY, which installed an underground Ratnik system last year" (SAM, p. 32).

**Ca. 1966** ..."Fred Pabst decided neither he nor Bromley were through. Thus was born another Pabst innovation--installation of an unprecedented snowmaking plant at a cost of nearly three quarters of a million dollars. "Nobody thought you could cover a whole damn mountain with snowmaking", he comments in typical fashion. "Now they all want to come study how I do it. What they don't know--in fact, what I don't know--is whether this kind of expenditure can ever pay for itself," he says, concerned that the industry won't let his "world's largest snowmaking" claim go unchallenged for long." (Gatlin, p. 86.)

**1968** "The development of airless guns began in 1968 when SMI took out a license under the Hanson patent to manufacture their airless snowmaker. It wasn't long before Linde in Europe and Hedco in the US also filed for patents" (Erickson II, p. 32).

**1968** Tower-mounted guns are used at Kissing Bridge in western New York. ""This all started when Art

Klein, my top snowmaking man, came to me with the idea of using bigger nozzles to get more snow out of a single gun", says Loomis. "We took the 9/16 inch nozzle out of a Larchmont gun and put it out on the hill. After 10 minutes of operation I knew the idea would work, so we shut down the whole system and converted as many guns as we could to the cannon variety. This gave us nine out of 18 guns with 11/8 inch nozzles producing five times what the smaller guns were capable of. With more snow coming from the guns, it seemed logical to get the guns higher in the air to increase the area each gun would cover. We jury rigged 15 foot booms on the light towers, put a swivel plate on the bottom of the guns, and stuck the guns at the ends of the booms"" (Skiing Area News, Spring 1968, pp.21-22).

**1971** Snowmaking installed on upper Snowdon at Killington (Lorentz, p. 259).

"We were changing from an insurance policy to a situation where snowmaking enhanced even natural snow by correcting the wear and tear from skiing" Pres Smith (Lorentz, p. 97).

"High elevation and steep terrain had not been tackled in prior years, but Pres Smith was right on the mark with the decision to go ahead. There were those in the industry who looked at us like we were nuts. But the inner vision of guaranteeing skiing all over the mountain was a good one" . Dave Wilcox (Lorentz, p. 97).

**1971 (June)** Hedco advertises Hedco H-2d airless system in SAM (SAM June 1971, back cover).

**1972** Sherburne Corporation acquires Sunday River (Lorentz, p. 259).

"The utilization of operating and financial systems developed at Killington helped turn the Sunday River operation around. The new marketing program and addition of snowmaking ...improved the image of the area (Lorentz, p. 142).

**1974** At Killington, "new commitment made to snowmaking at high elevations and expansion of snowmaking to cover 154 acres" (Lorentz, p. 260).

"But in 1974, Smith observed that due to changes in technology, skiers had become more proficient than ten years before, and therefore exerted more wear and tear on the slopes. "The result is that snowmaking is here to stay. Henceforth, ski area operators will depend solely on machine-made snow, and skiers will demand machine-made snow to insure the quality of their skiing experience; he predicted.

Since Killington was already hosting numbers of skiers who could "wear out" the snow, Smith could perceive what the next step would be. Other ski areas were not doing as well, so that when the snowless winters hit, they understood the insurance concept but it took several years more--a whole decade for some--before they would commit their resources to the massive investments required to cover entire mountains. It took the poor snow season of 1980, when only two Vermont areas finished in the black, to convince many operators of the necessity of snowmaking as a means to providing "a consistent product"" (Lorentz, p. 98).

**1975** At Killington, "snowmaking added to Cascade" (Lorentz, p. 260).

**1977** Sherburne Corporation acquires Mt. Snow (Lorentz, p. 260).

**1980** At Killington, "poor natural snow year with only 138 inches but season operates for record 221 days due to snowmaking" (Lorentz, p. 260).

**1981** "Another milestone in Killington's approach to ski area operations occurred when Joe Sargent announced a fundamental change in philosophy at the 1981 annual meeting. ...Sargent announced that in the future the company would operate on the assumption that erratic winter weather would be a normal

part of operations. 'The traditional assumption that it's going to snow and then expressing disappointment and negative impacts when it doesn't is a things of the past"....a new focus on the quality of snow surfaces, which entailed the increased snowmaking and grooming efforts, emerged" (Lorentz, p. 121).

**1990 (May)** Dedrite snowguns introduced in SAM (SAM, May 1990, pp. 27-30).

## References

Blaisdell, Harold F., "Pipe the Snow", *American Ski Annual and Skiing Journal*, 1951-52, pp. 68-72.

Bousquet, Paul, former Killington employee, telephone conversation, May 2001.

Editors of Ski Area Management, "Special Report on Snowmaking", *Ski Area Management*, Summer 1966, pp. 29-42.

Erickson, Nils, "A Short History of Snowmaking", *Ski Area Management*, May 1980, p. 70-71.

Erickson, Nils (II), "Snowmaking: The State of the Art", *Ski Area Management*, ?1982 or 1983, pp. 32-38.

Gatlin, L. Dana, "You've Gotta Be Rich...Or Crazy...Or Fred Pabst", *Skiing*, March-April 1968, p6 4.

Hall, Fred A., "Manufacturing Snow By Shaving", *Canadian Ski Year Book*, Montreal, 1934.

Hitchcock, John, Letter, "John Hitchcock records the First-Ever Man-made Snow", *Skiing Heritage*, Third Issue 1999, p. 10.

Lorentz, Karen D., *Killington: A Story of Mountains and Men*, Shrewsbury, VT, Mountain Publishing, Inc, 1990.

Moore, Henry S., "Garden Show Holding Sports Spot Light as N.E. Waits Real Snow", *Boston Herald*, December 3, 1937, p. 37.

Schoenknecht, Walter R., "Mohawk Mountain Ski Area", *American Ski Annual and Skiing Journal*, 1950-51, pp. 203-204.

Shyke, I., "How Snow-Making Equipment Works", *Ski*, February 1957, pp. 32-33.

Walsh, William A., Jr., "Snow Making's Role in Skiing", *Eastern Ski Annual* 1957, pp. 51-54.